

Département de Physique Nucléaire
SÉMINAIRE

Mardi 04/12/2018, 11h00-12h00

CEA Saclay, Orme des Merisiers Bat 703, p 45

The Karlsruhe Tritium Neutrino experiment: first
tritium runs

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The discovery of neutrino oscillations has proven that neutrinos have mass, and yet, for all the experimental efforts to constrain it, the neutrino mass scale remains undetermined.

The KATRIN experiment aims at measuring the effective electron antineutrino mass m_{ν} with a 0.2 eV (90 percent C.L.) sensitivity by analysing the beta-decay spectrum of molecular tritium near its endpoint. This 70 m-long experiment consists of a windowless gaseous source, differential and cryogenic pumps for tritium retention, and a main spectrometer acting as a high-pass filter for the electrons collimated towards the 148-pixel silicon detector.

If a direct measurement of m_{ν} would constrain Standard Model extensions, a precise observation of coherent neutrino scattering would provide a novel probe for studying interactions beyond the Standard Model. To this end, the Ricochet experiment aims at placing a combination of Germanium and Zinc bolometers close to a nuclear reactor and leverage particle identification.

This talk will focus on the commissioning of the KATRIN experiment, with an emphasis on the analysis of its first tritium runs. Additionally, background simulations and sensitivity studies for Ricochet will be presented.

Le cafe sera servi 10 minutes avant

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http://irfu.cea.fr/dphn/Phocea/Vie_des_labos/Seminaires/index.php